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Are you familiar with the term Network Neutrality? If you are anything like the average person, you most likely have not heard of the phrase. If you have heard of it, there is a good chance you are not quite sure what it means -- and for good reason. The main stream media has not made it any easier to understand and does not care to. That is because the companies that control the content on your television also want to control the content on your Internet-connected computer.

In layman's terms, Network Neutrality basically means that any website or service on the Internet should have an equal opportunity to be accessed by you, the consumer, and vice-versa.

What follows is a discussion on Network Neutrality and what it means to you, the consumer. You will hear a brief introduction to the history of Network Neutrality -- where it came from, who defined it, and why it was defined -- and you will be brought up to date on the current debate. You will then be acquainted with the detractors of Network Neutrality and we will introduce you to the term astro-turfing. Then, we will show you the proponents of Network Neutrality, from the technical community to the freedom-fighters. Further, we will talk about the *possible* future of the Internet that those proponents are fighting against, where Network Neutrality has lost.

There is a possible future where Network Neutrality is upheld. In that future, the benefits that come from Network Neutrality will be more apparent and more obviously connected to the prosperity of each an every one of us. With that future in mind, we will continue our discussion on Network Neutrality by examining the ethical implications on individuals and society. And we will focus acutely on the concept of an open network and the dynamics that lead to innovation in that kind of environment. Finally, we will discuss some of the current events involving Network Neutrality that are unfolding before us today and we will discuss some of the things we can do as a community to affect a future that fulfills our ethics and aspirations.

The term common carrier" was first used some time after the 13th century as a reference to printers and boatmen but, by the 16th century, English common law had formally established the term as a distinction between private occupations and more public, common occupations which serve the public need. Occupations considered common were innkeepers, fairy-men, surgeons, smiths, wagoners, etc. (Wu) Today, many public services occupied by private companies hold the status of common carrier and are highly regulated to serve the public interest. The common carrier concept may be seen as the oldest ancestor to Network Neutrality.

Another ancestor of Network Neutrality (we could say, on its mothers side) is The Pacific Telegraph Act of 1860 in which it is stated that messages being routed from any party, and between telegraph lines, shall be impartially transmitted in the order of their reception. (Cooper, 1860) During a time in which significant consolidation of the telegraph industry was taking place, eventually leading to Western Union as the one standing telegraph monopoly, this law signaled recognition by the lawmakers that users of the telegraph service needed to be treated fairly and equally.

Now fast-forward to 1981, to the dawn of the World Wide Web. The design of the Internet was still being devised and group of men, Jerome H. Saltzer, David P. Reed, and David D. Clark, put forward the end to end principle, by which our current Internet has been highly influenced. (Wu) It states that the real intelligence involved with communicating over networks should be maintained at the network end-points, as much as possible. This means, keep the network devices, which connect the host devices, as dumb as possible. The idea is that the

simpler the Internet is, the easier it will be to build complex applications on top of it. For the most part, the idea has worked rather well.

This notion of a dumb Internet that treats everyone fairly has faced some resistance in recent years, though. Organizations such as HandsOff.org claim to be "a nationwide coalition of Internet users united together in the belief that the Net's phenomenal growth over the past decade stems from the ability of entrepreneurs to expand consumer choices and opportunities without worrying about government regulation." They have released funny and cute cartoons on the Internet poking fun at Network Neutrality groups that want to regulate the Internet. HandsOff.org is actually an astro-turf organization, meaning that the hypothetical grass in what would be a real grass-roots campaign is actually fake grass or turf. (Lessig, McChesney, 2006) If one looks at their site close enough, it is clear that, rather than being a nationwide coalition of Internet users, they are sponsored by AT&T, Verizon, Comcast and Time Warner Cable, all of whom have lobbied against Network Neutrality in congress. (Berners-Lee, 2006)

A satirical Internet cartoon, sponsored by HandsOff.org at http://www.dontregulate.org/, gives a typical argument made by Network Neutrality detractors. Below, I paraphrase some of the monologue from that cartoon and provide some responses on a point by point bases:

> You know how people have been talking about saving the Internet with Network Neutrality? Well, really, they just want to regulate your freedom on the Internet!

Actually, they want to regulate big telecoms as 'common carriers.

> Is the Internet really in danger and need saving? Things keep getting better and faster and there are more options than ever before. Lots of money is being invested in the Internets speed and some big corporations like Google, Yahoo, and Microsoft cant wait to use it. Theyre doing things like streaming videos, voice, music, and HD movie downloads. Theyre going to make billions! But they dont want to pay anything. Instead, they want to stick consumers with the whole bill.

False. Network Neutrality sets into law the way things currently work. Everyone pays evenly for commensurate service, without discrimination. Telcos want the right to charge discriminatively. (Berners-Lee, 2006)

> These corporations are lobbying congress to create volumes of new regulations, to control how information is allowed to be shared over the Internet. Should politicians replace network administrators? It will be the first major government regulation of the Internet!

Until now, telcos have obeyed the non-discrimination guidance of the FCC, but the telcos have made recent attempts to buck that guidance on the grounds that the FCC does not have regulator authority. Network Neutrality seeks to fix that. (Dortch, 2005)

> These big corporations and the Save the Internet campaign want the government to take control of the Internet. They say it is to prevent websites from being blocked, but they can only cite two examples of this happening -- and they were in Canada! [queue Canadian music]

Yet another straw man argument. Later we will show you the real dangers of letting the telcos use discrimination.

> The Net Neutrality law has to do with a fundamental question over who should control the Internet: The people or the government?

Or the telcos. Yet another straw man.

> And its a fight about who is going to pay: Multi-billion dollar corporations or you?

Give us the service we want, and we will pay for it.

As you can see, the telecommunications companies (telcos) will stoop very low and even lie about what their intentions are in this debate. (Berners-Lee, 2006) They pretend that they are

a grass-roots campaign and that content generators like Google, Microsoft, and Yahoo are trying to steal your money! Yes, the telcos use a lot of bandwidth, but they pay fair-market value for that bandwidth. Yes, a lot of their traffic travels over to the other side of the network as well, on to the users ISP network, but the user is paying for that bandwidth at fair-market value. The telcos want us to believe that these high traffic sites are double-dipping but they are not. In reality, everyone currently pays evenly. The telcos want to leverage their position to charge more or give selective preference for higher traffic sites and services.

Fortunately, there are individuals and groups that see through their smoke-screen. There are hundreds of Internet companies, thousands of social groups, and millions of individuals active in the effort to push Network Neutrality forward. (Karr, 2010)

The companies behind Network Neutrality are usually content providers, like search engines, blogs, news aggregators, etc. Companies like Google thrive on the size and diversity of the Internet. The more websites and services there are on the Internet, the more useful Googles indexer is to users. In that way, many companies like Google are mutually invested with their users in the success of the Internet.

In the summer of 2007, the FCC was auctioning off the 700 MHz portion of the wireless spectrum to wireless Internet service providers. Googles CEO, Eric Schmidt, pledged in a letter to the FCC that Google will offer a minimum of 4.7 billion dollars for the contract if the FCC promised to enforce four specific rules on whomever won the contract. Those rules required that the contract winner allowed for (1) open applications, (2) open devices, (3) open wholesale services, and (4) open network access for the whole 700 MHz spectrum. (Schmidt, 2007) What was Googles incentive for doing this? They want the Internet to spread as far and wide as possible, for as low of a price as possible.

SaveTheInternet.com is a coalition of thousands of organizations and millions of individuals. In order to prevent the passage of a bill that threatened Network Neutrality in congress, in 2006, they amassed 1.5 million supporting signatures, effectively stalling the legislation. Their stated mission is to protect Internet freedom. SaveTheInternet.com is a truly grass-roots campaign and their website is a good place to get involved.

Vint Cerf has been widely regarded as the father of the Internet for his contributions to the TCP/IP specification. (Karr, 2010) Currently working as a Vice President at Google, he has publicly argued for placing common carrier status on telcos and for requiring that they practice non-discrimination. As Mr. Cerf said in a letter to congress, Allowing broadband providers to segment their IP offerings and reserve huge amounts of bandwidth for their own services will not give consumers the broadband Internet our country and economy need.

Another icon of the Network Neutrality debate has been Tim Berners-Lee. Mr. Berners-Lee has commonly been called the inventor of the World Wide Web. He created the first browser and the first web server, along with HTTP, HTML, and URI specifications that make up the web today. Mr. Berners-Lee, too, has been an outspoken advocate of Network Neutrality. He has openly criticized the telcos for spreading misinformation and uncertainty about Network Neutrality.

Other notable Network Neutrality supporters have been Lawrence Lessig, a law professor at Stanford University and founder of the Center for Internet and Society and Timothy Wu, a law professor at Columbia Law School and the chair of media reform organization Free Press.

All of these supporters fear a future where the network is not neutral, but is segmented. The intentions of the giant telcos might start out as seemingly benign. They would say, Look, we want to provide high quality video streaming solutions to the living-rooms and to the smart-phones of tomorrow, but there simply is not enough bandwidth. We will fix this by allocating a

certain amount of bandwidth for dedicated video traffic. The web browser will go a little bit slower, but the video will always look great!

There are two problems with that. First, weve already given them the money to build the bandwidth, they just refuse to do it -- we will get back to that point shortly. But the other problem is this: Whos video service gets this special treatment? If I start an online video distribution service in my basement tomorrow, can I be a content provider on this new IP HOV lane? The answer is no, not without a multi-million dollar contract, and here is why: Prioritization can not preserve non-discrimination. It would be impossible to allow unbiased usage of this fast-lane on the Internet without various parties gaming the system. If everyone had access to this fast video pipe, I could make a Web server that dumps the byte string of an HTML response into an MP4 encoder and give you a browser plug-in that allows you to decode MP4 data into HTML. Now our HTML can ride the fast lane -- as a pretend video -- and you can surf the Web faster than any one else. Additionally, more and more traffic these days is being encrypted and it is impossible to tell what data formats are being transmitted over the wire, video or otherwise.

Therefore, these specialized, high-priority distribution networks that the big telcos want to build will have to be closed off to only the **affiliated partners** of the Internet Service Provider. Verizon might do a deal with the NFL, while Comcast might do a deal with FIFA. You might notice some parallels between this future and the cable industry of the past.

We are at a transition point in history. Telephones and television networks are being replaced by the Internet. Given enough broadband deployment, there is no reason why telephone and video services should not be bought from different providers over the Internet. But the telcos are stalling on broadband deployment. They want to keep high bandwidth services on the Internet unreliable. This keeps some start-ups on the open Internet from building reliable systems to replace the current cable and telephone systems -- and gives the telcos an excuse (network unreliability) to use discriminative force, making a last minute end-run to corner the IPTV and VOIP markets before their legacy markets dry up.

What is even more alarming, though, is the precedent that could be set by allowing such network discrimination practices. What would quickly follow IPTV and VOIP prioritizations are the prioritizations of other services that we take for granted today. News organizations would quickly sign on with the telcos for a premium news content delivery pipeline, charging users an extra ten or twenty dollars a month if they want the news. Want more reliable Instant Messaging with your loved ones? Sign up for the 5$ IM+Plus package. Want faster and more reliable Facebook and MySpace surfing? Buy the 10$ SocialWeb package.

Follow this train of thought to its logical conclusion and you will end up with just a few web portals to choose from, with an interface like cable TV but with interactive menus from which to buy services, content, and products. The only content available would be accessible through the portals curated garden of affiliated media outlets and their members of members. Launching a new website on the World Wide Web that is accessible from these controlled consumption environments without a million dollar contract would be impossible.

Once the telcos have gained complete control over the Internet access of users, they would not need to introduce premium services on top of things like email. They will simply charge you to use the existing email services of the affiliated network, like they do now with SMS text messages over the phone networks.

This is the bleak future that the forward thinking minds in the Network Neutrality debate fear. However, the Network Neutrality debate is not grounded in only fear, but also hope -- hope of a future where the innovations of the last 30 years are only a fraction of the innovations and growth our society will see over the next 30 years.

Aristotle and Plato advocated a form of ethics that promoted virtue, insofar as it promoted individuals to develop to their greatest potential. Network Neutrality might, in earlier times, be called an appeal to the virtuous network. The openness of the Internet represents one of mankinds greatest opportunities. It is perhaps the most democratizing and liberating force on the planet. Never before has it been so easy to have an idea and then spread that idea to millions around the world. More so than ever, ideas are being judged not by their source or by their messenger, but by their content -- by the virtue of the message.

The innovative power of the Internet was put well when Timothy Wu analogized it with the power grid, saying, The electric grid worked for the radios of the 1930s [the same way it] works for the flat screen TVs of the 2000s. For that reason the electric grid is a model of a neutral, innovation-driving network. We can not even imagine what discoveries and inventions lay in our future that will be built on the open Internet. That is, as long as an open Internet still exists.

As the situation currently stands, the telcos do not want to invest any more money into the Internet infrastructure. They are afraid that fast broadband service across the United States will foster the innovations that will kill off their telephone and cable services. They are actively trying to lobby against Network Neutrality and bring into law new regulations that will give them the power to pick and choose how they route and charge for the data moving across the Internet. American tax-payers have given the telcos billions already under the agreement that they would use it build out the last mile to residential areas, but they have refused to do so.

Go to http://SaveTheInternet.com and familiarize your self with the effort to make sure your Internet has a future. Contact your congressman or congresswoman and let them know where you stand on Network Neutrality and the common carrier status of the telcos. Call the FCC at 1-888-CALL-FCC (1-888-225-5322) or write them an email at fccinfo@fcc.gov and let them know that they need to use their authority to enforce network neutrality. Most of all, tell your friends and family the fight that is going on behind their backs and tell them to do something about it if they want their childrens children to have the opportunities in their lives that we have had in ours.

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